

## VOTE-BUYING AND RECIPROCITY

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While vote-buying is common, little is known about how politicians determine who to target. We argue that vote-buying can be sustained by an internalized norm of reciprocity. Receiving money engenders feelings of obligation. Combining survey data on vote-buying with an experiment-based measure of reciprocity, we show that politicians target reciprocal individuals. Overall, our findings highlight the importance of social preferences in determining political behavior.

KEYWORDS: Vote-buying, reciprocity, Paraguay, experiment, social preference, elections, corruption.

### 1. INTRODUCTION

IN MOST MODELS OF DEMOCRATIC POLITICS, politicians compete for votes. How politicians persuade voters to vote for them not only underpins our theories of democracy, but is central for understanding why politicians target goods toward particular groups of voters. The literature on redistributive politics has suggested several groups politicians might want to target, such as voters who are ideologically unattached, better organized, or more informed.<sup>2</sup> These predictions, however, often arise in models in which politicians can commit to future policies or compete based on a restricted set of standard policies.<sup>3</sup> Yet it is common around much of the world for politicians to offer goods to specific individuals before an election in exchange for their votes.<sup>4</sup>

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<sup>2</sup>Lindbeck and Weibull (1987) argued that politicians target voters without strong ideological attachments, whereas Cox and McCubbins (1986) suggested politicians target their core supporters. Other studies have suggested politicians target the well-informed (Grossman and Helpman (1996)), the relatively poor or numerous (Dixit and Londregan (1996)), or those who can solve collective action problems (Persson and Tabellini (2000)).

<sup>3</sup>When the assumption of commitment is relaxed, politicians may have to target other groups or implement inefficient forms of redistribution (Acemoglu and Robinson (2001), Coate and Morris (1995)).

<sup>4</sup>For instance, during Thailand's 1996 general elections, one-third of households were offered vote-buying, with an average offer of \$27 (Phongpaichit, Treerat, Chaiyapong, and Baker (2000)). In Nicaragua's 2008 municipal elections, 24% of registered voters claimed to be offered a gift or service in exchange for their vote (González-Ocantos, Kiewiet de Jonge, Meléndez, Osorio, and Nickerson (2010)). One legislative candidate in Taiwan was thought to have distributed up to \$3 million.

There are at least two features that differentiate vote-buying from standard forms of redistribution.<sup>5</sup> First, it is not an official policy to be judged at the polls, but rather a targeted attempt to weaken electoral discipline. Thus, vote-buying could potentially undermine the desired effects of democratic constitutional arrangements. Second, the individual transfers involved in vote-buying are relatively small, and are delivered personally. While the first feature underscores the importance of understanding the mechanisms that make vote-buying possible, the second feature suggests that factors governing interpersonal relationships may play a critical role.

In this paper, we investigate how vote-buying leverages social preferences. We argue that vote-buying is sustained, in part, by individuals' feelings of intrinsic reciprocity.<sup>6</sup> Voters who are offered money or material goods in exchange for their votes reciprocate because they experience pleasure in increasing the material payoffs of the politician who has helped them.

To test whether politicians target reciprocal individuals, we combine survey information on vote-buying experienced in a 2006 municipal election with experimental data on individual intrinsic reciprocity. In Paraguay, politicians hire respected community leaders in each village to interact with voters to promote their candidacy and offer them money and other forms of aid in exchange for the promise of their vote. One particularly novel feature of our data is that we conduct a survey with the actual middlemen who broker the vote-buying exchanges between voters and politicians.

We find that middlemen are much more likely to target reciprocal individuals. A 1 standard deviation increase in reciprocity increases the likelihood of experiencing vote-buying by 44%. This finding is robust to controlling for a rich set of individual characteristics, including other social preferences as well as social network architecture. We also find that villagers targeted for transfers are not significantly closer in the network to the middlemen. These findings indicate that our measure of intrinsic reciprocity is not proxying for other mechanisms that would make an individual more likely to cooperate in relationships in general or with the middleman specifically. Together, this suggests that we have measured a non-middleman-specific feature of the voter's utility function that makes him more likely to reciprocate in a noninstrumental way, and that this measure of reciprocity is strongly and robustly correlated with targeted transfers.

<sup>5</sup>Vote-buying can often refer to just the specific act of exchanging one's own vote for material goods. In this paper, we have adopted a broader definition of vote-buying to also include notions of clientelism, whereby voters support candidates who have provided them with particularistic forms of redistribution.

<sup>6</sup>According to Sobel (2005) and Cox, Friedman, and Gjerstad (2007), intrinsic reciprocity is a person's willingness to sacrifice his own material well-being to increase the payoffs of someone who has been kind to him or to decrease the payoffs of someone who has been unkind to him. This is contrasted with instrumental reciprocity, which is motivated by forward-looking self-interest.

That middlemen are able to target more reciprocal voters is not surprising in the context of these small village economies, where villagers know each other remarkably well. To demonstrate this, we compare the answers provided by the middlemen about the villagers with the answers provided by the villagers themselves. We find that the middlemen's and villagers' answers are not only highly correlated for questions regarding observable characteristics (e.g., landholdings and years of schooling), but also for social preferences. For instance, middlemen are able to predict villagers' play in a game measuring altruism and identify whether a person claims he would always punish someone who put him in a difficult situation.

Our results are consistent with three potential theories. First, because there is no formal way to contract on votes in an election with secret ballots, politicians and voters may be unable to credibly commit to an exchange (Robinson and Verdier (2003)). By targeting reciprocal individuals, middlemen can overcome these commitment problems. Second, middlemen may be buying the turnout of individuals whose vote they can predict rather than buying the vote of someone who would otherwise have voted for the opposition. Under both turnout-buying and vote-buying, the reciprocal individual will be the cheapest to purchase. Finally, vote-buying may be an outcome of a repeated game between the politician and the voter. Even if voters doubt the anonymity of the ballot, middlemen may want to target reciprocal individuals because, as Sobel (2005) pointed out, it will be easier to maintain a repeated game with mutual cooperation with those who are intrinsically reciprocal. In any case, our findings provide important evidence that middlemen do target transfers to reciprocal individuals.

While there is a nascent yet growing empirical literature on vote-buying and its determinants, much of the focus has been on the socioeconomic and demographic characteristics of those who get targeted (e.g., González-Ocantos, Kiewiet de Jonge, Meléndez, Osorio, and Nickerson (2010), Stokes (2005)). No paper to our knowledge has examined the importance of social preferences and pro-social attitudes in who gets targeted. The theoretical literature on vote-buying is much more developed than the empirical literature (Dal Bó (2007), Dekel, Jackson, and Wolinsky (2007), Dixit and Londregan (1996), Robinson and Verdier (2003)). However, many studies focus on the consequences of vote-buying on political competition and welfare. Finally, while the literature in political science does discuss the importance of reciprocity in maintaining vote-buying (Schaffer (2007)), our study is the first to test empirically the importance of reciprocity for vote-buying and for politics more broadly.

Our paper is also related to an important strand of the experimental economics literature that explores the extent to which behavior in a laboratory setting can explain behavior outside the lab. Several studies have shown that behavior in the lab can be predictive of a person's decision to, for instance, repay their microfinance loans (Karlan (2005)), donate to charities (Benz and Meier (2008)), or exert more effort in team production (Carpenter and Seki (2011)).

Our study complements this literature in demonstrating that reciprocity measured in an experiment is correlated with political behavior in the real world.

The remainder of the paper is organized as follows. Section 2 provides background information on the politics in Paraguay, as well as a brief discussion about why reciprocity may be an important feature of vote-buying. The data and an explanation of our measures of vote-buying and reciprocity are presented in Section 3. Section 4 presents the main findings of the paper along with a discussion of potential mechanisms, while Section 5 concludes.

## 2. BACKGROUND

Paraguay was a dictatorship under the rule of Alfredo Stroessner of the Colorado party from 1954 to 1989. Until 2008, when an independent bishop won the presidency, the Colorado party was the longest continuously ruling party controlling the national government in power at the time. Paraguay is a two-party country, although smaller parties have recently gained popularity. The 2006 elections discussed in this paper saw the election of 66% Colorado mayors, 30% Liberal mayors, and 4% mayors from other parties. Political parties in Paraguay are not very ideologically oriented. As a result, political campaigns tend to be highly personalized (Rizova (2007)).

When ideological differences are small, vote-buying and reciprocity can have a larger influence on voting. Political scientists note the importance of reciprocity for sustaining vote-buying. According to Schaffer (2007, p. 193), “embedding vote-buying within ritual gift exchange helps engender feelings of obligation among recipients, and can thus lower the rate of defection.” Likewise Hicken (2007, p. 157) stated, “in an attempt to change the cultural norms that support vote-buying in Thailand, specifically the norm of reciprocity, a senior Buddhist monk declared that it was not immoral to take money from one candidate and vote for another.” Dunning and Stokes (2007) found evidence of reciprocity in Mexico, where many initially pro-PRI (Institutional Revolutionary Party) voters who did not receive gifts decided to vote for the opposition.

The importance of reciprocity for the effectiveness of vote-buying is also evident in Paraguay. From July to September of 2005, Transparencia Paraguay (the national branch of Transparency International) carried out interviews and focus groups regarding the financing of electoral campaigns.<sup>7</sup> We present two quotes suggesting that reciprocity is a well-known phenomenon when it comes to vote-buying in Paraguay.

To enable us to obtain votes, we visit families personally and, for sure, right then and there, they are going to ask you for a favor. They first ask if you have work for one of the members of that family, help for health expenses, purchase of medicines, water bills, and electricity. They virtually force you to perform, and if you don't then you don't get their vote.—Atilio López (Liberal), head of the municipal legislature in Capiatá

<sup>7</sup>A more detailed description of this project can be found in the Supplemental Material (Finan and Schechter (2012)), along with additional quotes.

And the political operatives do their job with the money, specifically, with the money of the candidate. The operative does his work, buying the conscience of the voter with money, with alcohol, buying his id card, a little medicine, sugar, bread, tea, and in this way he goes buying and winning adherents.—*Antonio Espinoza, president of the neighborhood committee in Capilla del Monte*

If, as these quotes suggest, politicians rely on an individual's reciprocity to effectively buy votes, then the politician has an incentive to target the most reciprocal voters. Of course, if candidates target reciprocal voters, this assumes they know the voters' levels of reciprocity. In these rural settings, candidates do not interact directly with voters, but use political operatives (*operadores políticos*), who act as middlemen between the candidate and the voters. These political operatives tend to be village leaders who know their fellow villagers well.<sup>8</sup> Although there are additional quotes in the Supplemental Material, here is one.

For the community to conform, the candidate needs an *operador político* in the field: the *operador político*, a professional in politics and leader of his community, becomes the backbone of the election campaign. Through *operadores políticos*, candidates can build their network of promises of aid, favors, and meet the expectations of the poorest people in the electorate.

According to [Lehoucq \(2007, p. 39\)](#), the situation is similar in Taiwan and Thailand. "Candidates circumvented the secret ballot by working with local brokers, who, in the context of small and tightly knit rural communities, could reasonably predict the behavior of voters." Likewise, according to [Schaffer \(2007, p. 183\)](#) in the conclusion of his edited volume on vote-buying, "as several authors in this volume note, candidates who wish to undertake even moderately successful vote-buying campaigns need to know which voters are amenable to having their participation or abstention bought. Gathering this information requires extensive grassroots organizing, using local people with local knowledge."

### 3. SURVEY AND EXPERIMENTAL DATA

We use data from a household survey conducted in 2007 and a middleman survey conducted in 2010. The household survey is the fifth round of a longitudinal study initiated in 1991 by University of Wisconsin Madison in cooperation with the Centro Paraguayo de Estudios Sociológicos in Asunción. The original survey randomly selected 300 households based on landholdings from 15 villages in rural Paraguay.

<sup>8</sup>The use of middlemen for vote-buying has been well documented by anthropologists and sociologists. [Scott \(1972\)](#) described how norms of reciprocity and middlemen played important roles in Filipino elections. [Schmidt, Scott, Lande, and Guasti \(1977\)](#) presented the classic treatment on the role of brokers as central figures in the operation of clientelistic systems.

In 2002, 187 of the 223 remaining survey households sent a member to participate in experiments measuring trust, trustworthiness, and risk aversion. By 2007, only 202 of the original households remained and 248 new households were added to complete 30 households per village. In 2007, a module was added to capture voting and vote-buying. When possible, this political module was asked of the same individuals who participated in the games in 2002; we succeeded in 140 cases.

In 2010, we returned to two out of the three departments (covering 10 out of 15 villages) to interview political operatives. We interviewed 38 of the 43 middlemen working in those villages. First we asked them if they knew the 30 individuals and they knew 87 percent of them. For the individuals they knew, we asked questions to measure how well they knew them (e.g., their spouse's name, years of education, and hectares of land owned), whether or not that individual had been offered vote-buying by the middleman's party or another party, and how they thought the person would behave in altruism and reciprocity games.

### *Measuring Vote-Buying and Social Preferences*

Municipal elections occurred in November of 2006, the household survey took place between March and July of 2007, and the middleman survey took place between August and October of 2010. We have one measure of vote-buying from the household data and one from the middleman data. In the household survey, respondents were asked whether, during the run-up to the 2006 elections, any political party offered them money, food, payment of utility bills, medicines, and/or other goods (excluding propaganda hats, shirts, and posters). In 2010, we asked the middleman if his party offered each of the 30 individuals money, food items, payment of utility bills, medicines, and/or other goods, and then separately asked whether another party offered the individual those same items. The vote-buying variable measured from the middleman survey is the union of the answers to those two questions, indicating whether or not the middleman claims that any party offered the individual vote-buying.

Our measure of reciprocity is constructed from play in the 2002 trust game (Berg, Dickhaut, and McCabe (1995)). In this game, the first mover was given 8000 Gs (1000 Gs were worth about 20 cents U.S. at the time of the experiment) and had to decide whether to send nothing, 2000, 4000, 6000, or 8000 Gs to the second mover. Whatever he sent was tripled and the second mover could keep or return as much as he wanted. Before finding out how much was sent to him, the second mover was asked how much he would return if he received 6000 Gs, how much if 12,000 Gs, how much if 18,000 Gs, and how much if 24,000 Gs. Then he had to play accordingly.

Second movers may choose how much to return based both on their level of altruism and on their level of reciprocity. The more altruistic they are, the more they should return in all four cases. The more reciprocal they are, the

more they should return when the first mover treats them well and the less they should return when the first mover treats them poorly. We assume that when the first mover sends at least half, the second mover thinks that he has been treated well. On the other hand, if the first mover sends less than half, then the second mover thinks he has been treated poorly. To measure reciprocity, we calculate the average share returned when receiving 12,000, 18,000, or 24,000 Gs (signifying the first mover sent half or more of his endowment) minus the share returned when receiving 6000 Gs (signifying the first mover sent only a quarter of his endowment). In this way, we subtract out altruism to have a pure measure of reciprocity.

Next we take this measure and censor it below 0. A negative value of the share difference means that the recipient returns a higher share when treated poorly than when treated well. If we take this seriously, it would suggest that a politician should treat people with negative share differences poorly. Since transfers from politicians must be nonnegative, the worst thing a politician can do to an individual is to give him nothing. Thus, it is optimal to transfer nothing to people with both negative and zero values of the share difference.

Since all play was one shot and anonymous, this measures intrinsic (rather than instrumental) reciprocity. We can link the experimental measure of reciprocity from 2002 to information on vote-buying in 2006 for 140 of the original 187 players. Average reciprocity is 0.043.

### *Summary Statistics*

We see in Table I that based on the household survey, 26% of the full sample claim to have been offered something in exchange for their votes in the 2006 municipal elections. The average value of the transfer offered is \$48 and the mean is \$18. A day of labor in agriculture earns between \$3 and \$4 so this is a sizeable amount. Both main parties participate in vote-buying. We find that 31% of those who self-identify as Colorado and 23% of those who self-identify as Liberales claimed to have experienced vote-buying. It is also the case that 13% of those who are affiliated with neither main party experienced vote-buying. The amounts offered, conditional on being offered, are quite similar across parties. Villages contain a mix of Colorados and Liberales: the share of respondents in a village claiming to be Colorado ranges from 0.37 to 0.83 with a median value of 0.53.

Middlemen claim that their party offered something to 33% of the individuals in our sample who they knew, and claim that some party offered something to 46% of the individuals.<sup>9</sup> The individual's report is predictive of the middleman's report of vote-buying at the 5% level after controlling for middleman fixed effects. A regression of the middleman's report on the individual's report,

<sup>9</sup>This is the mean over all middlemen's statements regarding all individuals.



TABLE I  
SUMMARY STATISTICS<sup>a</sup>

	Mean	Standard Deviation
Vote-buying		
Offered by either party (reported by individual, 2007)	0.258	0.438
Offered by either party (reported by middleman, 2010)	0.460	0.499
Demanded from middleman's party (reported by middleman, 2010)	0.262	0.440
Reciprocity (individual experiments, 2002)	0.043	0.076
Voting behavior (individual survey, 2007) <sup>b</sup>		
Voted in 2006 election	0.702	0.458
Believes the ballot is anonymous	0.535	0.499
Political sentiment	0.401	0.491
Registered voter	0.829	0.377
Votes by party	0.227	0.419
Supports Colorado party	0.557	0.497
Registered voters in the municipality (in thousands)	9.139	4.677
Perceived voting behavior (middleman survey, 2010) <sup>c</sup>		
Voted in 2006 election	0.888	0.315
Believes the ballot is anonymous	0.933	0.249
Political sentiment	0.362	0.481
Supports Colorado party	0.476	0.500
Household characteristics (individual survey, 2007)		
Male	0.673	0.470
Age	49.92	15.58
Years of schooling	5.054	2.980
Household wealth (in U.S. dollars)	33,356	138,833
Number of family members eligible to vote	2.849	1.163

(Continues)

including middlemen intercepts, yields a significant coefficient of 0.053 (standard error, 0.023). Our estimates of both the incidence of vote-buying and the amount are consistent with several estimates in the literature (Stokes (2005), Vicente (2008), Wang and Kurzman (2007)).

For many of our control variables, we have versions from both the 2007 and 2010 surveys. For example, we know both whether the individual claims to have voted (70% of the sample) and whether the middleman thinks the individual voted (89% of the individuals the middleman knew). We also know whether the individual claims to support the Colorado party (56%) and whether the middleman thinks the individual would rank Colorados higher than Liberales on a feeling thermometer (48%). In 2007, we had the individuals participate in a dictator game choosing how much to give out of 14,000 Gs to an anonymous village-mate. The average amount sent was 5100 Gs. When we asked the middlemen how much they thought the individuals would give in such a game, the average answer was 4800 Gs.



TABLE I—*Continued*

	Mean	Standard Deviation
Other controls <sup>d</sup>		
Altruism (individual experiment, 2007)	5.089	2.677
Risk (individual survey, 2007)	2.087	1.773
Time preferences (individual survey, 2007)	199.4	561.2
Trust (individual survey, 2007)	2.570	1.309
Didn't understand risk game (individual survey, 2007)	0.189	0.392
Network degree (individual survey, 2007)	8.795	4.608
Network clustering coefficient (individual survey, 2007)	0.191	0.190
Network contagion time (individual survey, 2007)	5.149	1.739

<sup>a</sup>The 2007 survey data are based on 449 observations. The 2007 (2002) experimental data are based on the 281 (140) observations in which the same person who participated in the games answered the political survey. The 2010 middleman data are based on answers given by 38 middlemen regarding 299 individuals for a total of 977 observations. Reciprocity is the average share returned when receiving 24,000, 18,000 or 12,000 Gs in the trust game minus the share returned when receiving 6000 Gs, censored below 0.

<sup>b</sup>Political sentiment is 1 if the person says he is a strong party member of either of the two main parties. Vote by party is 1 if the person says voters ought to always vote for their party even if they don't like their party's candidate. Anonymous ballot is an indicator for whether the respondent thought someone could figure out how a person in his polling locale had voted.

<sup>c</sup>Political sentiment is 1 if the middleman says the individual rates one of the parties higher than 30 (out of 40). Anonymous ballot is an indicator for whether the middleman thought the individual thought the ballot was secret. Voted is an indicator for whether the middleman thought the individual voted in 2006. Colorado is an indicator for whether the middleman thinks the individual rated Colorados higher than Liberales on a feeling thermometer.

<sup>d</sup>Altruism is the amount the individual sent, out of 14,000 Gs in an anonymous dictator game. Risk is the number of risky choices made in a hypothetical risk game. Time preferences is the amount the person would have to be offered in 1 month rather than accepting 50,000 Gs today. Trust is what share of political candidates the person says can be trusted where 5 is all, 3 is half, and 1 is none. Didn't understand risk game is 1 if the person chose a dominated option. Network degree is the number of households in the village with which the household is connected, the clustering coefficient is the number links between an individual's "friends" divided by the number of links that could possibly exist between them, and the contagion time is a measure of how long it would take information to get from the household to everyone else in the village.

#### 4. EMPIRICAL RESULTS

We begin this section by examining the extent to which middlemen know the individuals. We show that middlemen do remarkably well in predicting not only the observable attributes of villagers, but also their social preferences. We then provide empirical evidence that reciprocal individuals are more likely to be targeted for vote-buying and discuss potential mechanisms behind this association.

##### 4.1. *How Well Do Middlemen Know Villagers?*

One of our central premises is that middlemen can infer which villagers are most reciprocal. We test this assumption in Table II, which measures the accuracy of the middlemen's responses to questions about the individuals. In the first five columns of panel A, we report a series of summary statistics based on

TABLE II  
MIDDLEMEN'S KNOWLEDGE OF VILLAGERS' CHARACTERISTICS<sup>a</sup>

	Obs.	Mean	Standard Deviation	10th Percentile	90th Percentile	<i>p</i> -Value
						$H_0$ : mean > random selection
A. Share of villagers for whom the middleman correctly predicted						
Spouse's name	38	0.838	0.137	0.600	1.000	NA
Still alive	38	0.996	0.015	1.000	1.000	0.00
Has moved from the village	38	0.988	0.020	0.960	1.000	0.00
Voted in 2006 municipal elections	38	0.711	0.113	0.556	0.821	0.00
Identified with the Colorado party	38	0.771	0.109	0.643	0.889	0.00
Identified with the Liberal party	38	0.830	0.104	0.706	0.944	0.00
Identified strongly with the Colorado party	38	0.736	0.106	0.565	0.840	0.00
Identified strongly with the Liberal party	38	0.826	0.120	0.679	0.964	0.07
Sent half or more in the dictator game	38	0.666	0.177	0.455	0.913	0.01
Would always punish a person if they put them in a difficult situation	38	0.737	0.161	0.536	0.923	0.02
Trusted less than half the people in their village	37	0.740	0.112	0.655	0.828	0.00
B. Average correlation between middleman's reported and villagers' actual						$H_0$ : mean = 0
Years of schooling	38	0.734	0.168	0.456	0.913	0.00
Amount of land owned (ha)	38	0.633	0.214	0.237	0.863	0.00
Amount sent in a dictator game	35	0.084	0.281	-0.287	0.472	0.08

<sup>a</sup>Panel A reports the average across middlemen of the share of villagers for whom their responses were the same as those given by the middleman. The last column reports the *p*-value associated with a one-sided test comparing the share of correct responses from the middlemen to the share of correct responses based on random guessing from a binomial distribution with a mean equal to the sample average. Panel B reports the average correlation across middlemen between the response of the villagers and those given by the middleman. The last column reports the *p*-value associated with a two-sided test that the average correlation across middlemen is zero.

the share of correct responses by each middleman to various questions with binary outcomes. In the last column, we report the  $p$ -value associated with a one-sided test that compared the share correct given by the average middleman to the share correct of someone who knew the sample average but then guessed at random.<sup>10</sup> For the continuous outcome measures presented in panel B, we present summary statistics on the simple correlation between a middleman's responses and the villagers' responses. In the last column, we test whether the average correlation across middlemen is zero.

The results of Table II indicate that middlemen know the other members of the village extremely well. For example, the correlation between the middleman's report of the villagers' years of schooling and the villagers' own reports is 0.73. To put this number into context, according to [Ashenfelter and Krueger \(1994\)](#), the correlation between identical twins' reports of each other's years of schooling ranges from 0.87 to 0.92. Middlemen also do well in predicting the amount of land households own (an average correlation of 0.68) and can correctly name the spouses of the other villagers 84% of the time.

As expected, middlemen also accurately predict villagers' political attributes. On average, middlemen correctly answered whether an individual voted in the 2006 elections 71% of the time. The average share correct over middlemen would only have been 56% if they had guessed at random based on the sample average. The middlemen also predicted with high success villagers' political leanings; middlemen correctly identified whether a villager supported the Colorado party or the Liberal party 77 and 83% of the time.

In addition to the villagers' observable characteristics, the results from Table II also suggest that middlemen are able to infer the villagers' social preferences. For instance, middlemen correctly predicted whether 66% of the villagers sent at least half of their endowment in a dictator game. Moreover, the correlation between the middleman's belief regarding the amount sent and the actual amount is 0.084, which is statistically different from zero at the 10% level. Middlemen also correctly predicted for 74% of the sample whether the person identifies himself as not trusting and whether he would always punish someone who put him in a difficult situation. In both cases, the middlemen fared significantly better than someone guessing at random would have.

In sum, Table II provides strong evidence that these middlemen, who have lived in the village for on average 39 years and have served as middleman for on average 18 years, are quite knowledgeable about the other members of the village and their basic social preferences.<sup>11</sup> Moreover, given that these mid-

<sup>10</sup>Specifically, for each middleman, we drew randomly from a binomial distribution with the sample mean and computed the share of correct responses. We then averaged across the 38 "middlemen" to compute the average share correct. We repeated this procedure 10,000 times and computed the  $p$ -values associated with comparing this empirical distribution to the true average across middlemen.

<sup>11</sup>The ability to provide accurate assessments about others, while impressive, has been documented in other settings. [Takasaki, Barham, and Coomes \(2000\)](#) found that village informants

dlemen were asked to answer questions about 30 randomly selected villagers, these results may represent a lower bound for the extent to which middlemen know members of their own patron–client network.

#### 4.2. *Vote-Buying and Reciprocity*

To examine the relationship between reciprocity and the likelihood that someone is targeted for vote-buying, we estimate a series of linear probability models

$$(1) \quad \text{offered}_i = \alpha + \beta \text{reciprocity}_i + X_i' \delta + \varepsilon_i,$$

where  $\text{offered}_i$  is an indicator for whether individual  $i$  was offered some good in exchange for his vote. The variable  $\text{reciprocity}_i$  denotes the experiment-based measure of reciprocity, while the vector  $X_i$  represents a set of observable characteristics at the individual, household, and village levels. The error term  $\varepsilon_i$  denotes unobserved characteristics that determine a vote-buying exchange. All standard errors are robust against heteroskedasticity.

Table III presents results from estimating variants of Equation (1). Column 1 reports the unadjusted relationship between whether the person claims he was offered goods in exchange for his vote and reciprocity. The specification presented in column 2 controls for a rich set of characteristics: gender, age, education level, wealth, number of family members eligible to vote, registered voter, believes the ballot is anonymous, has strong political sentiment, votes by party, supports the Colorado party, and number of registered voters in the municipality. While several of these variables are themselves equilibrium outcomes and should arguably not be included as controls, they may serve to proxy for some unobserved characteristics that might be correlated with reciprocity.

From the bivariate relationship in column 1, a 1 standard deviation increase in reciprocity increases the likelihood of being targeted by 9.6 percentage points, which represents a 42.1% increase from the average vote-buying experienced by the sample. The results in column 2 suggest that it is unlikely that politicians are using vote-buying as a signal of future support to certain groups. The inclusion of additional controls that represent most, if not all, of the standard socioeconomic characteristics emphasized in the redistributive politics literature (e.g., age, gender, education, income level, strength of party preferences, etc) has only a minimal effect, as the coefficient (point estimate, 1.318; standard error, 0.568) remains statistically and economically indistinguishable from the unadjusted estimate presented in column 1. When comparing the impact of reciprocity to the impact of log wealth, we find that a 1

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in the Peruvian Amazon can report the physical and human capital of other villagers quite accurately.

TABLE III  
VOTE-BUYING AND RECIPROCITY

	Dependent Variable <sup>a</sup>					
	Individual Offered Something in Exchange for Vote				Individual Offered Something in Exchange for Vote (as Reported by the Middlemen)	Demanded
	(1)	(2)	(3)	(4)	(5)	(6)
Reciprocity	1.259 [0.512]**	1.318 [0.568]**	1.207 [0.640]*	1.294 [0.579]**	0.382 [0.223]*	−0.027 [0.358]
Observations	139	139	103	139	314	309
Mean of dependent variable	0.23	0.23	0.23	0.23	0.47	0.30
Main controls	N	Y	Y	Y	Y	Y
Controls for other personal traits	N	N	Y	N	N	N
Controls for social network	N	N	N	Y	N	N

<sup>a</sup>For each dependent variable listed at the top of each column, the table reports the ordinary least squares estimates of the effects of reciprocity. Main controls include gender, age, education level, number of family members eligible to vote, log of household wealth, whether the individual is a registered voter, believes the ballot is anonymous, has strong political sentiment, votes by party, supports the Colorado party, and number of registered voters in the municipality. In columns 5 and 6, the controls when available are based on the middlemen's responses; otherwise, the controls are based on the individuals' responses. Columns 5 and 6 include middleman intercepts and cluster at the middleman level. In addition to the full set of controls, the specifications in column 3 include measures of altruism, risk, time preferences, trust, and understanding of games; in column 4, they include the degree, clustering coefficient, and contagion time from the social network. Robust standard errors are reported in brackets. \* denotes significant at 10%; \*\* denotes significant at 5%; \*\*\* denotes significant at 1%.

standard deviation increase in reciprocity has the same impact as a 1.8 standard deviation decrease in wealth. Thus, reciprocity is both statistically and economically significant in predicting political transfers.<sup>12</sup>

#### 4.2.1. *Robustness*

Reciprocity may not be the only social preference that affects vote-buying. Altruism, trustworthiness, risk aversion, or time preference may also influence targeting. For example, voters may be risk averse as to the true anonymity of their vote. Candidates might also target trustworthy voters who can be trusted to keep their promise. If these other personal traits are correlated with our measure of reciprocity, then our estimates are potentially biased. In column 3 of Table III, we test whether the association between reciprocity and vote-buying is robust to controlling for these traits. We control for an individual's level of risk aversion, time preference, and trust in candidates based on survey data, and for altruism based on the anonymous dictator game conducted in 2007. Controlling for these additional characteristics does not affect the outcome of interest, as we see that reciprocal individuals are still more likely to experience vote-buying (point estimate, 1.207).<sup>13</sup>

Politicians may also choose to target individuals with larger social networks, since offering something to a well-connected person may induce others to vote for that candidate either through social learning or conformity. Alternatively, well-connected people may have traits other than reciprocity that lead them to cooperate more often. Thus, if individuals with larger social networks are also more reciprocal, then our effects will be overestimated. We have detailed data on each survey respondent's social network, so we look at three network variables: the degree is the number of households in the village with which the household is connected, the clustering coefficient is a measure of how connected the household's friends are to one another, and the contagion time is a measure of how long it would take information to get from the household to everyone else in the village.<sup>14</sup> In column 4 of Table III, we control for all three measures and find that our estimated effect remains unchanged.

<sup>12</sup>We also find that reciprocal people, as measured by the experiment, are more likely to reciprocate receiving vote-buying transfers. We estimate Equation (1) using as the dependent variable whether respondents who reported being offered and accepting a good from some political party voted for that party. Despite only having 22 observations, and even after controlling for various individual and household characteristics, we find a strong correlation between reciprocity and voting for the party that bought one's vote (point estimate, 1.338; robust standard error, 0.627).

<sup>13</sup>Our results are also robust to controlling for whether the person attended a political rally, which could proxy for someone's level of civic-mindedness.

<sup>14</sup>To be specific, the clustering coefficient is the number of links between an individual's 'friends' divided by the number of links that could possibly exist between them. The path length between two individuals is the shortest path between them while the contagion time is the path length between the individual and the person from whom he is farthest away.

Another concern is if individuals misreport vote-buying in a way that is correlated with reciprocity. For example, if reciprocal people are more honest or better able to remember the instances in which such an exchange was proposed, then the results may be confounded. In column 5, we reestimate the model using as a dependent variable an indicator for whether the middleman claims a person was offered vote-buying by any party.<sup>15</sup> Using this more general measure, we also find a strong and robust relationship between the targeting of individuals and reciprocity. Although some middlemen may be more likely than others to admit that vote-buying takes place at all, it is not clear that, conditional on admitting that vote-buying takes place, they should selectively admit that vote-buying was offered to specific types of individuals.<sup>16</sup> Because our results hold using both the middlemen's and the individuals' statements regarding vote-buying, we are confident that our results are not due to reporting errors.

#### 4.2.2. *Discussion*

Overall, our findings suggest that middlemen are much more likely to target reciprocal individuals. There are four potential explanations for this reduced-form result. First, as Robinson and Verdier (2003) pointed out, most standard models of elections suggest that vote-buying should not exist. With secret balloting, votes are unobservable and a politician's promises are unenforceable. With this double commitment problem, there is no formal way to contract for votes in an election. One explanation of our results is that politicians target more reciprocal individuals, and this helps them overcome the commitment issues associated with anonymous voting.

A second interpretation of our findings is that politicians actually know which party voters prefer and are simply paying them to turn out to vote. Politicians will have an incentive to target more reciprocal individuals even in a model of turnout-buying. This is because, without reciprocity, a politician will have to pay a voter the cash equivalent of his disutility from voting to convince him to turn out. Reciprocal people can be paid less than their disutility from voting, since the receipt of money will engender in them a desire to reciprocate. In principle, one could test the turnout-buying model. Middlemen should be less likely to target either an individual with a high propensity to vote, given

<sup>15</sup>Note that the unit of observation in this regression is a middleman-individual pair. Thus when estimating this regression, we include middleman fixed effects and cluster the standard errors at the middleman level.

<sup>16</sup>A middleman may have an incentive to underreport his own vote-buying from friends or relatives so as not to appear guilty of cronyism. On the other hand, middlemen should not have an incentive to selectively lie about to whom the other party offers money. When we measure vote-buying based only on who the middleman claims the other party targeted, we find that it is still significantly correlated with reciprocity. (The coefficient is 0.538 with a standard error of 0.235 when using middleman fixed effects and clustering at the middleman level.)



that the voter will vote anyway, or an individual with a low propensity to vote, given that this voter is more costly to convince to vote. Unfortunately, without a good measure of someone's propensity to vote, it is difficult to test this alternative mechanism.<sup>17</sup>

Another interpretation of our results is that reciprocity is not necessarily enabling politicians to overcome a commitment problem, but rather facilitating cooperation in a repeated game. Table I showed that only 54% of individuals claim to believe their ballot is secret. If voting is believed to be observable, then repeated-game interactions between the middleman and the voter might be another channel by which vote-buying is sustained. However, even if the ballot were not anonymous, middlemen still have an incentive to target intrinsically reciprocal individuals. As Sobel (2005) pointed out, intrinsic reciprocity (i.e., when a kind act by one individual affects the preferences of another to elicit kindness in response) can also help sustain cooperation in repeated games, and this would explain the correlation we find between intrinsic reciprocity, which is measured based on a one-shot game, and vote-buying.<sup>18</sup>

However, the perceived lack of secrecy of the ballot would also allow for the possibility of instrumental reciprocity (i.e., the strategy by which selfish individuals sacrifice their short term gains to increase their future payoffs). If voting is believed to be observable, an individual may behave reciprocally with a middleman, not because he is intrinsically reciprocal, but to sustain a long-term relationship with the middleman or his party. There are three reasons why our results do not reflect instrumental reciprocity. First, although only 54% of individuals claim to believe their ballot is secret, when we worded the question slightly differently in the follow-up survey, we found that 81% of individuals interviewed thought the ballots are secret and middlemen believe that 93% of individuals think the ballots are secret. Thus, it is likely that the original question was misunderstood and that the majority of individuals do believe their vote cannot be observed.<sup>19</sup> Second, we do not find any evidence that middlemen target individuals who do not believe the ballots are anonymous. Third, using data on the middlemen's social networks, we do not find any evidence

<sup>17</sup>We experimented with using an individual's distance to a polling station as an instrument to estimate his propensity to vote. Although distance to the voting booth does predict one's likelihood to vote, it is still too weak to use as an instrument.

<sup>18</sup>Using a one-shot gift-giving game to classify intrinsically reciprocal individuals, Gächter and Falk (2002) found evidence that reciprocal individuals are much more likely to sustain cooperation in a repeated game.

<sup>19</sup>In 2007, we asked individuals, "In your opinion, can someone figure out how someone in your polling place voted?" As we discovered in the field, this poorly phrased question can be interpreted as "figuring it out," because people know each other's preferences. In 2010, we reworded the question we asked middlemen to be, "Do you think that votes are secret?" We also resurveyed a sample of 119 of the original 449 households and asked them the same question.

that they are more likely to target individuals with whom they are linked socially.<sup>20</sup>

A final explanation is that the correlation we estimate is due to reciprocal voters approaching middlemen and demanding favors from them. We can test this explicitly because we asked the middlemen whether each individual requested goods from his party during the elections. According to these middlemen, 26% of our sample approached them for some good. However, as shown in column 7 of Table III, we do not find any evidence that reciprocal individuals are more likely to demand vote-buying.

## 5. CONCLUDING REMARKS

In this paper, we argue that in rural Paraguay, vote-buying is sustained, in part, by intrinsic reciprocity. Using a novel data set combining survey data on vote-buying with data on behavior in experiments, we show that politicians, via middlemen, are 44% more likely to offer an individual who is 1 standard deviation more reciprocal something in exchange for his vote than the average individual.

Overall our findings provide evidence on the influence that reciprocity can have in politics and highlight the need to reexamine some of the core assumptions underlying standard voting models. Voters have other-regarding preferences and these preferences may affect how they vote, and consequently the policies politicians adopt.<sup>21</sup> Voters' social preferences may explain outcomes that are difficult to rationalize with standard models such as why people vote or why voters respond to economic growth just prior to an election. While recent models incorporating social preferences have provided some useful insights into such issues (Fowler (2006), Rotemberg (2009)), more research is clearly needed.

<sup>20</sup>On the other hand, we do find that the middleman is more likely to choose to play an economic game with those individuals with whom he is linked socially. A skilled middleman targets vote-buying to those whose votes are most cheaply and reliably bought (the reciprocal), while he chooses to play the economic games with people with whom he interacts socially.

<sup>21</sup>Although this is the first paper to explicitly test this hypothesis empirically, it is evident in other studies. For instance, Romer (1996) argued that negative reciprocity can explain the expansion of Social Security in the United States during the 1950s and why voters respond to an entitlement payment differently than a transfer. Recently, Manacorda, Miguel, and Vigorito (2011) showed that recipients of a cash transfer program supported the incumbent government and this support continued on even after the program ended. The persistence of these effects is difficult to rationalize with a pocketbook voting model or a standard political agency model, but it is consistent with voter reciprocity. Vicente (2008) conducted an innovative anti-vote-buying campaign and found that it reduced the influence of money offered on voting. One interpretation of this result is that the campaign, which implored voters to vote their conscience, broke the norm of reciprocity.

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